

Clean Catalysts for Water Recovery Systems in Long-Duration Missions, Phase I

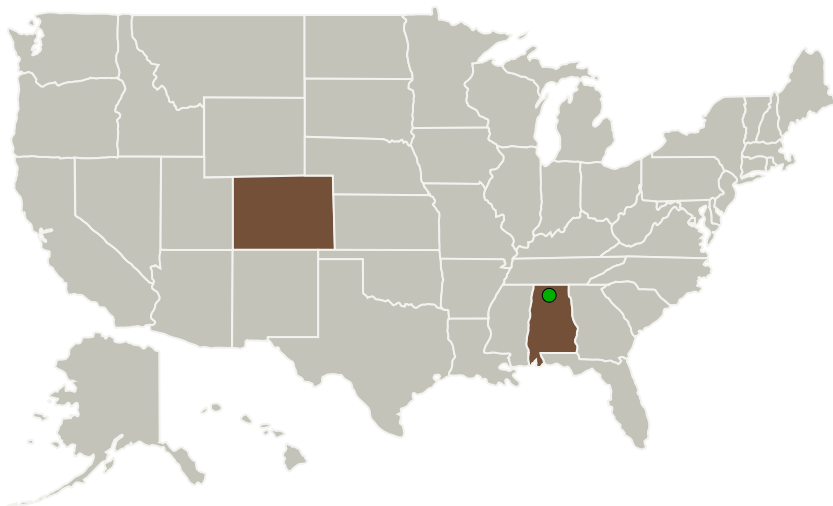
Completed Technology Project (2014 - 2014)



Project Introduction

Oxidation catalysts based on innovative, physically-robust activated carbon materials containing dispersed noble metals are essential in process optimization for production of high-quality potable water in long-duration manned space missions. An innovative catalyst technology is proposed for development to a full-scale advanced life support and space station system size and configuration. The innovative support material is Porous Solid Carbon (PSC) monolith, which has been highly successful at small scale operation under previous programs, but has not been fully developed for spacecraft use to date. This material represents the state-of-the-art in advanced catalyst supports being developed for industrial applications. A catalytic oxidation process based on the PSC catalysts and operated at or below pasteurization temperatures is expected to meet NASA objectives at the minimum power/mass/consumables penalty. The key benefit of the PSC catalyst technology is that it has unsurpassed potential to exhibit the combination of physical stability and high catalytic activity over multi-year operational lives. The Phase I material development program will lay the foundation for an operational pilot system to be fabricated and delivered during the Phase II program.

Primary U.S. Work Locations and Key Partners



Clean Catalysts for Water Recovery Systems in Long-Duration Missions Project Image

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Organizations Performing Work	Role	Type	Location
Environmental and Life Support Technology, Inc.	Lead Organization	Industry	Parker, Colorado
● Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	Colorado

Project Transitions

▶ **June 2014:** Project Start

✔ **December 2014:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/140545>)

Images



Project Image

Clean Catalysts for Water Recovery Systems in Long-Duration Missions
Project Image
(<https://techport.nasa.gov/image/130504>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Environmental and Life Support Technology, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

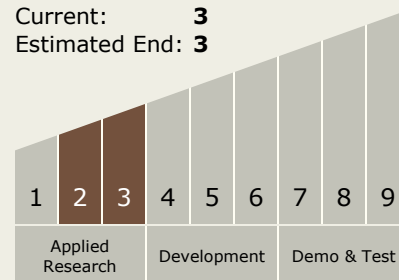
Carlos Torrez

Principal Investigator:

Clifford Jolly

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
 - └ TX06.1.2 Water Recovery and Management

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System